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(57) Abstract:

SOLUTION: This aqueous ink composition contains (A) a coloring agent containing 0.001-2.0wt.% of a dyestuff (e. g. a direct dyestuff, a basic dyestuff of an acidic dyestuff) of carbon black and 3-30wt.% of a pearl-lustrous pigment, (B) a water-soluble resin such as a water-soluble acrylic resin, a crosslinked acrylic acid resin or a carboxymethylcellulose, (C) a water-soluble organic solvent such as ethylene glycol, propylene glycol or glycerol, and (D) water as main components.

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CLAIMS

[Claim(s)]

[Claim 1] a coloring agent, a water soluble resin and the water-soluble organic solvent, and the aqueous ball-point ink constituent that makes water a principal component -- setting -- the aforementioned coloring agent ***** -- 3 - 30% of the weight of a pearly-luster pigment, and 0.001 - 2.0% of the weight of a color -- and -- or the ink constituent for aqueous ball-points characterized by carbon black containing

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the aqueous ball-point ink constituent which has the gloss of the shape of the beautiful shape of a pearl, and a metal.

[0002]

[Description of the Prior Art] Since the aqueous ball-point had the characteristic features, like the writing touch is light, writing line concentration is also deep, and there is also no Botha omission compared with the oily ball-point, the request of a consumer was diversified and the demand to multiple color, such as the nigrities and red, and not only the color generally used conventionally of being blue but yellow, pink, an orange, etc., a still vivid fluorescence color, or a metal color came out of it by the end of today while an aqueous ball-point comes to be used abundantly from an oily ball-point. As water color ink of a metal color, what contained perfluoro alkyl phosphoric ester in a metal aluminum pigment, the water-soluble organic solvent, and water (publication number 6**192610) is known.

[0003] However, if the pigment which made metals, such as a metal aluminum pigment, fine particles is used as a coloring agent, since that the performance which a stability with the passage of time is inferior in, and is satisfied that it is easy to corrode is not obtained, and the color to wish is limited extremely, the request for which a consumer asks will not respond to it.

[0004]

[Problem(s) to be Solved by the Invention] this invention is offering the ink which has the gloss of the favorite shape of the beautiful shape of a pearl, and a metal for which it wishes, and was excellent in the stability with the passage of time as aqueous ball-point ink which has the gloss of the shape of the beautiful shape of a pearl, and a metal, without using a metal with the pigment made into fine particles.

[0005]

[Means for Solving the Problem] the result variously examined in order that this invention might obtain the aqueous ball-point ink which has the gloss of the shape of the beautiful shape of a pearl, and a metal -- coloring agent ***** -- 3 - 30% of the weight of a pearly-luster pigment, and 0.001 - 2.0% of the weight of a color -- and -- or by making carbon black contain, it finds out that the purpose can be attained and this invention is completed

[0006]

[Embodiments of the Invention] namely, the aqueous ball-point ink constituent with which this invention makes a principal component a coloring agent, a water soluble resin and the water-soluble organic solvent, and water -- setting -- the aforementioned coloring agent ***** -- 3 - 30% of the weight of a pearly-luster pigment, and 0.001 - 2.0% of the weight of a color -- and -- or it becomes the water-color-ink constituent which had the color which has the gloss of the shape of the favorite beautiful shape of a pearl for which it wishes, and a metal, and was excellent in the stability with the passage of time by making carbon black contain

[0007] The pearly-luster pigment used in this invention uses as detailed powder the mica which is the mineral matter, the front face was covered with the metallic oxides of a high refractive index, such as titanium oxide and an iron oxide, and was stabilized, and the light reflected on the boundary of the layer of titanium oxide with a high refractive index, and the mica with a low refractive index and a surrounding medium brews the gloss of the shape of the shape of a pearl, and a metal, a color -- and -- or carbon black is for making it a favorite color tone the color which are a pearly-luster pigment and a favorite color tone as a coloring agent -- and -- or while the color tone of the varieties which are not obtained in the ink using the metal powder can be freely chosen by using it combining carbon black, it reacts gradually with acidity or alkali like a metal powder, and gas is not generated, or it is not invaded by the oxygen dissolved in the water which is a principal component, either, but becomes the water-color-ink constituent excellent in the stability with the passage of time. Only few gloss is acquired, when the operating rate of a pearly-luster pigment is made into a writing line, although 3 - 30% of the weight of the domain was desirable and became the gloss of the shape of the shape of a pearl, and a metal at 3 or less % of the weight. If it is 30 % of the weight or more, although it will be based also on the water soluble resin to use, the water-soluble organic solvent, and a dispersant, it becomes difficult to make it distribute uniformly. The most desirable domain of a pearly-luster pigment was 5 - 20 % of the weight. If a pearly-luster pigment is illustrated concretely Iriodin100 -- said -- 103 -- said -- 111 -- said -- 120 -- said -- 123 -- said -- 151 -- said -- 153 -- said -- 163 -- said -- 173 -- said -- 201 -- said -- 211 -- said -- 221 -- said -- 223 --

said -- 231 -- said -- 205 -- said -- 215 -- said -- 217 -- said -- 219 -- said -- 225 -- said -- 235 -- said -- 249 -- said -- 259 --
 said -- 289 -- said -- 299 and Timiron MP-115 -- said -- MP-1001 -- said -- MP-47 -- said -- MP-1005 -- said -- MP-10 -- said
 -- MP-45 -- SP and Extender W (above wholly product made from MERCK) etc. is mentioned.
 [0008] a color -- and -- or although carbon black is for taking out a favorite color tone, the operating rate is good at 0.001 -
 2.0 % of the weight When it was 0.001 or less % of the weight and it considers as a writing line, color tone concentration runs
 short. If it is 2.0 % of the weight or more, although color tone concentration will become excessive too much and it will be
 based also on the operating rate of a pearly-luster pigment, it becomes difficult to acquire the gloss of the shape of the shape
 of a pearl and a metal. If a color is illustrated concretely C. I. Direct Yellow 44, C. I. Direct Yellow 50, C. I. Direct Red 84,
 C. I. Direct Red 225, C. I. Direct Violet 9 and C. I. Direct Blue 2, C. I. Direct dye, such as Green 30, C. I. Basic Yellow 25,
 C. I. Basic Orange 2, C. I. Basic Red 9, C. I. Basic Violet 3, C. I. Basic Blue 1, C. I. Basic dye, such as Blue 9, C. I. Acid Yellow 1
 and C. I. Acid Yellow 7, C. I. Acid Orange 7, C. I. Acid Red 1, C. I. Acid Red 13, C. I. Acid Red 94, C. I. Acid Violet 7 and C. I. Acid
 Blue 7, C. I. Acid Blue 9, C. I. Acid Blue 74, C. I. Acid Blue 90, C. I. Acid Green 7, C. I. Acid Green 16, C. I. Acid dye, such as
 Brown 39, is mentioned. Carbon black becomes possible [acquiring the glossy color tone of the shape of the beautiful shape
 of a pearl for which it wishes by using it silver combining each above mentioned color independent, or the mixed thing and
 the mixed pearly-luster pigment, and a metal] by using it combining a pearly-luster pigment.
 [0009] The water-soluble acrylic resin currently generally used as aqueous ball-point ink as a water soluble resin which can
 be used by this invention although used as a viscosity controlling agent, bridge formation -- a type acrylic acid resin, a
 carboxymethyl cellulose, and polyvinyl alcohol -- A polyvinyl pyrrolidone, a methyl cellulose, a glyoxal addition methyl
 cellulose, A carboxy cellulose, a hydroxymethyl cellulose, an ethyl cellulose, A hydroxyethyl cellulose,
 hydroxypropylcellulose, a sodium alginate, Natural gums, such as synthetic compounds, such as a copolymer of vinyl
 acetate and a polyvinyl pyrrolidone and a poly-N ** vinyl acetamide, ***** and a guar gum, xanthan gum, and a
 carrageenan, etc. can be illustrated. these water soluble resins -- a kind -- or two or more sorts can be mixed and it can also be
 used

[0010] a kind from the ethylene glycol currently generally used as aqueous ball-point ink although the water-soluble organic
 solvent is used for the purpose, such as a lubricous effect which makes smooth metal chip section ink xerans prevention at
 the nose of cam of a ball-point, ink anti-freeze in low temperature, and ball rotation, a diethylene glycol, a triethylene glycol, a
 propylene glycol, a polyethylene glycol, a glycerol, etc. -- or two or more sorts can be mixed and it can be used
 [0011] It cannot be overemphasized that the additive which makes good the surfactant generally used, a dispersant, a
 rust-proofer, the writing touch, etc. besides the above-mentioned principal component can be used. As a surfactant, anion
 system surfactants, such as Nonion system surfactants, such as a sorbitan fatty acid ester, a glycerine fatty acid ester,
 polyoxyethylene fatty acid ester, polyethylene glycol fatty acid ester, polyoxyethylene alkyl ether, and polyoxyethylene alkyl
 phenyl ether, an alkyl sulfate, a polyoxyethylene-alkyl-ether sulfate, alkyl phosphate, and an alkyl sulfo carboxylate, etc. are
 mentioned. As a dispersant, an acrylic styrene copolymer, maleic acids and styrene copolymers, those saturation salts, etc. can
 be illustrated. As a rust-proofer, a benzotriazole, a tolyl triazole, a dicyclohexyl ammonium nitrate, etc. can be illustrated. As
 an additive which makes the writing touch good, alkali-metal *****s of a fatty acid can be illustrated and an oleic-acid
 potassium, a sodium oleate, a calcium stearate, a lithium stearate, etc. can be illustrated.

[0012]

[Example] Next, an example explains this invention in detail.

[0013]

[Table 1]

(重量部)

	実施例 1	実施例 2	実施例 3	実施例 4	実施例 5
Timiron MP-115	7	-	-	-	-
Iriodin 123	-	10	-	-	-
" 111	-	-	15	15	15
カーボンブラック	-	-	0.03	-	-
C.I. Acid Red 94	0.5	1.0	-	-	-
" Blue 30	-	-	-	0.5	1.0
Himeta-X90 SH-15000水溶液	40	50	-	-	-
ジョングリル 61J	5	5	-	-	-
NVA 剤 CX-205	-	-	3	3	5
" GE-191	-	-	0.04	0.04	0.06
グリセリン	30	25	35	30	30
トリエチレングリコール	5	5	8	10	10
水	残部	残部	残部	残部	残部
プロクセル GXL	0.05	0.05	0.05	0.05	0.05
BF-1228	0.05	0.05	0.05	0.05	0.05
オレイン酸カリウム	0.08	0.08	0.1	0.1	0.1

- 1) 真珠光沢顔料 (メルクジャパン (株) 製)
- 2) グリオキサール付加メチルサルローズ (信越化学工業 (株) 製)
2%水溶液 (トリエタノールアミンで中和 PH 7.5 に調整)
- 3) アクリル・スチレン樹脂 (ジョンソンポリマー (株) 製)
- 4) ポリN-ビニルアセトアミドの架橋性ポリマー (昭和電工 (株) 製)
- 5) " (")
- 6) 1, 2-ベンゾチアザリン-3-オン (英国ICI社製)
- 7) ノニオン系フッ素含有界面活性剤 ((株) トーケムプロダクツ製)

[0014] Lysis and variance were performed, agitating them in ordinary temperature, after examples 1-5 ****ed each composition component, and the ink constituent for aqueous ball-points which is in the TOKIMEC EHD, INC. type viscometer on conditions with a measurement temperature of 25 degrees C, and is in the domain of the viscosity values 200-2500 by rpm20.0 was obtained.

[0015] Next, the example of a comparison is shown.

[0016]

[Table 2]

(重量部)

	比較例 1	比較例 2	比較例 3	比較例 4
Timiron MP-115 ①	2	-	-	-
Iriodin 123 ①	-	10	-	-
" 111 ①	-	-	15	40
カーボンブラック	-	-	3	-
C.I. Acid Red 94	0.5	0.0005	-	-
" Blue 90	-	-	-	0.5
Hibar-190 SH-15000水溶液 ②	40	50	-	-
ジョンクリル 61J ③	5	5	-	-
NVA 60マー GX-205 ④	-	-	3	3
" GE-191 ⑤	-	-	0.04	0.04
グリセリン	30	25	35	30
トリエチレングリコール	5	5	8	10
水	残部	残部	残部	残部
ブロクセル GXL ⑥	0.05	0.05	0.05	0.05
BF-122B ⑦	0.05	0.05	0.05	0.05
オレイン酸カリウム	0.08	0.08	0.1	0.1

[0017] The example 1 of a comparison carries out the pearly-luster pigment of composition of an example 1 to 2% of the weight from 7 % of the weight, and a part reduced its weight is the composition to which water was made to increase. The example 2 of a comparison is the composition to which decreased the quantity of the color rate of composition of an example 2 to the ultralow volume, and the Bunsui was made to increase. The example 3 of a comparison is the composition which was made to increase the amount of the carbon black used of composition of an example 3, and decreased the quantity of the Bunsui. The example 4 of a comparison is the composition which was made to increase the pearly-luster pigment of composition of an example 4 from 15 % of the weight to 40% of the weight, and decreased the quantity of the Bunsui.

[0018] The examples 1-4 of a comparison were measured on these conditions using the same viscometer as an example, and the ink constituent for aqueous ball-points of viscosity domain 200-2500cp was obtained.

[0019] Next, [0020] which shows the test result of the pearl and metal-like gloss of an example and the example ink of a comparison, a daily stability, and writing line concentration in Table 3

[Table 3]

	実施例 1	実施例 2	実施例 3	実施例 4	実施例 5
真珠・金属状光沢	◎	◎	◎	◎	◎
経日安定性	◎	◎	◎	◎	◎
筆記線濃度	◎	◎	◎	◎	◎
	比較例 1	比較例 2	比較例 3	比較例 4	
真珠・金属状光沢	△	◎	△	◎	
経日安定性	◎	◎	◎	×	
筆記線濃度	○	×	◎	○	

真珠・金属光沢、筆記線濃度は、ボール径0.7mmの金属チップを用いて筆記した線を熟視し判断した。良好なものを◎、やや良好を○、やや悪いものを△、悪いを×とした。

経日安定性試験

定性試験
ポリエチレン製容器にインキを室温保存し、1ヵ月、3ヵ月、6ヵ月後の粘度を測定し、粘度の変化をみた。

×： 1ヵ月で成分分離

△: 3ヵ月良好だが6ヵ月で成分分離

◎： 6 力月良好

[0021]

[0021]
[Effect of the Invention] the aqueous ball-point ink constituent which makes a principal component a coloring agent, a water soluble resin and the water-soluble organic solvent, and water as explained to the above-mentioned detail -- setting -- the aforementioned coloring agent ***** -- 3 - 30% of the weight of a pearly-luster pigment, and 0.001 - 2.0% of the weight of a color -- and -- or the ink constituent for aqueous ball-points characterized by carbon black containing has the gloss of the shape of the beautiful shape of a pearl, and a metal, and serves as ink excellent in the stability with the passage of time

[Translation done.]